SONY SH800 User Guide Version: 1.0 Revised: 20.04.21

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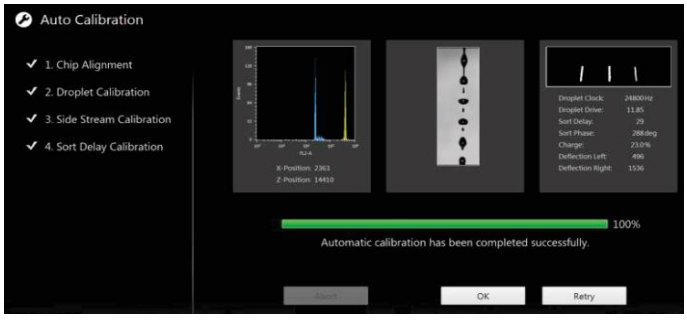
1. Start Up

a. Fill the sheath tank (until, but not over the welded line)
b. Empty the waste tank in the sink
c. Fill the sterile water tank (MilliQ)
d. Turn on the house air supply, on the wall
e. Power up the SH800 and the computer(if not on)
f. Log into Windows
   • User:
   • Password:
g. When instrument displays: *Standby* , launch the Cell Sorter software
   • Log in with your user (Hint:Group leader's last name)

2. Automatic Alignment and Sort Setup

a. Scan the QR code on the sorting chip package
b. Check the 488nm laser box
c. Always chose filter setting: *Without 405nm*
   • Our instrument doesn't have the other filters!
d. During Initial Instrument setup (≈ 7min), click *Sheath Filter De-bubble* and follow the prompts
e. When prompted, mount a sample tube containing SONY Automatic Setup Beads, found in the fridge door
   • Always vortex the bead bottle and tube!
   • Refill bead suspension in tube to marked line. The tube should contain at least 0.5 mL (10 drops) of bead suspension.
   • Never dilute the bead suspension.
   • Put bead bottle and tube back in the fridge IMMEDIATELY after use (dark,4°C).
f. Click OK to initiate the Automatic Setup processes:
   • Chip Alignment
   • Droplet Calibration
   • Side Stream Calibration
   • Sort Delay Calibration

   Duration: ≈ 10-15 min



3. Automatic Droplet Breakoff Control

a. The software constantly monitors the live image of the droplet formation throughout the day.
b. With Control Breakoff active (box checked) the software automatically adjusts the droplet drive amplitude. Control Breakoff should never be de-activated by the user during normal operation.
c. A **green** ball in the corner of the Droplet Viewer indicates the status of the *breakoff control*

   • A solid green ball indicates that the droplet formation is being controlled properly and the sort delay calibration is valid.
   • **The system will sort correctly when the green ball is solid.**
   • A flashing green ball indicates that the software is working to return the system to the calibrated state.
   • A grey ball indicates that the Control Breakoff has been temporarily deactivated by the software while a cleaning procedure (Probe Wash Cycle f. ex.) is in progress.
d. An error message will be displayed if the droplet drive amplitude changes too much. The error message recommends that the user run the Sort Calibration again.

4. Experiment setup

a. See the User Manual or Quick Reference Guide (in the drawer next to the instrument).

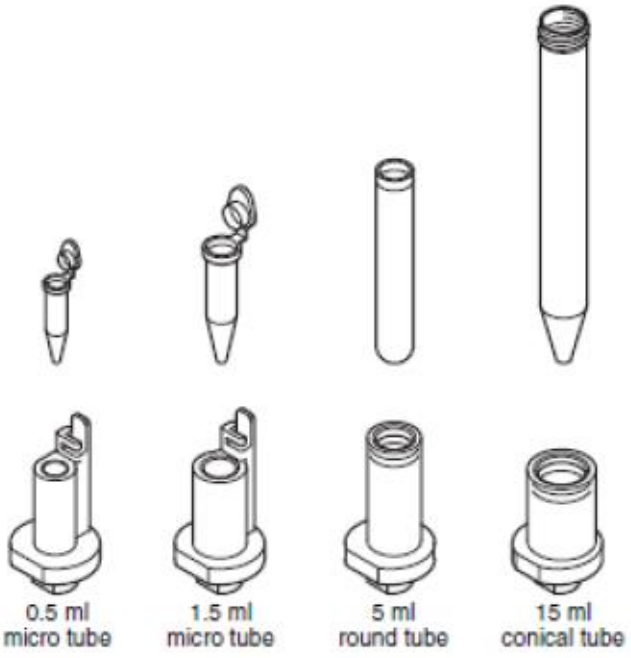
5. After sorting

a. Wipe off and put sort collection devices back in the cupboard.
b. Never leave the Sony ON without confirmation that the next user will come. You will be held responsible if the next user doesn't show up!
c. Go to Shutdown if not sure or if you can't wait!

6. Cleaning with/without Shutdown

a. Go to the Cytometer Tab and click *Software and Hardware Shutdown*
b. Click *Start* and follow the software prompts for *Normal Cleaning* (6+4min)
   • Provide 10 mL of FACS Clean in a 15 mL tube
   • Provide 12 mL of MilliQ water in a 15 mL tube
c. Write an entry in the Sony Log book
d. If another user is coming click *Cancel* when prompted for Shutdown, then Log out. *Shutdown*: power off instr. and software.
e. **IMPORTANT! Always turn off the house air supply, on the wall!**

Sony SH800 Sampling options:



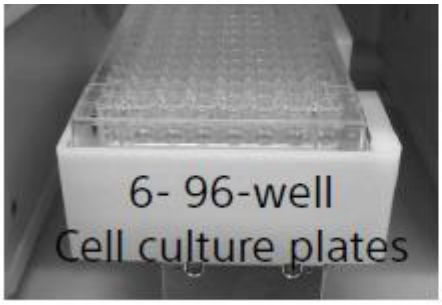
NB: Only use these tube types, and always use the corresponding adapter!

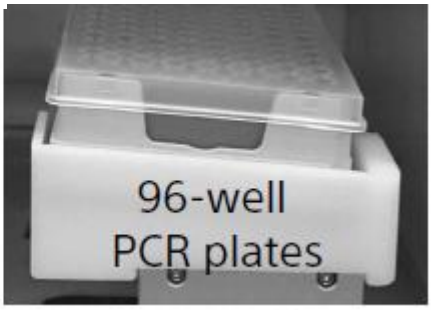
Sony SH800 Sort Collection devices:

5 ml FACS tubes

Collection Tube Temperature Control

15 ml Falcon tubes





Sorting advice:

Always filter your sample before using the Sony!

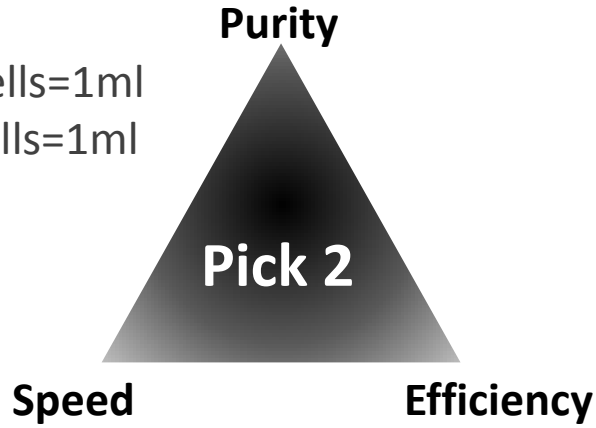
Sort Mode advice:

- **Single Cell/Purity** for sorting 1cell/well (cloning)
- **Semi-Purity** for sorting in tubes or multiple cells/well

The other sort modes are for very rare occasions

Sort Volume:

- 70µm : 750.000 sorted cells=1ml
- 100µm (Standard): 300.000 sorted cells=1ml
- 100µm (Targeted): 250.000 sorted cells=1ml
- 130µm : 70.000 sorted cells=1ml



- Maximum event rate:
  - Purity Sorts: Rule of thumb ~1/4 – 1/5 droplet frequency
- Every Particle larger than your nozzle will *definitely* **clog** it!

Nozzle Size	Droplet Frequency	Purity Mode	Yield Mode (not common)	Cell Size
70 µm	50000/s	10000 – 15000 eps	Up to 50000 eps	< 10 µm
100 µm: Standard	30000/s	6000 – 7500 eps	Up to 30000 eps	< 12 µm
100 µm: Targeted	23000/s	4600 – 6000 eps	Up to 23000 eps	12 – 16 µm
130 µm	12000/s	2500 – 3000 eps	Up to 12000 eps	Fragile Large Cells

- **Sample Pressure:**
  - For Sorting not higher than 6.

100 µm sorting chip

[Sample Pressure]		1	2	3	4	5	6	7	8	9	10
Flow rate (µl/min)		6	11	16	21	27	37	47	58	68	89
Event rate (eps)	Sample concentration (1e6/ml)	60	160	260	350	450	650	840	1,000	1,200	1,600
	Sample concentration (1e7/ml)	600	1,300	2,100	2,800	3,600	5,100	6,600	8,100	9,600	12,600

130 µm sorting chip

[Sample Pressure]		1	2	3	4	5	6	7	8	9	10
Flow rate (µl/min)		1	3	7	10	16	22	28	34	40	50
Event rate (eps)	Sample concentration (1e6/ml)	10	30	100	150	250	400	500	600	700	900
	Sample concentration (1e7/ml)	100	600	1,200	2,000	2,800	3,600	4,500	5,400	6,500	8,000

70 µm sorting chip

[Sample Pressure]		1	2	3	4	5	6	7	8	9	10
Flow rate (µl/min)		8	18	28	42	62	80	100	120	140	168
Event rate (eps)	Sample concentration (1e7/ml)	1000	2200	3500	5300	7700	10000	12500	15000	17500	21000